

262,144-words x 4-bit Fully Decoded Random Access Memory

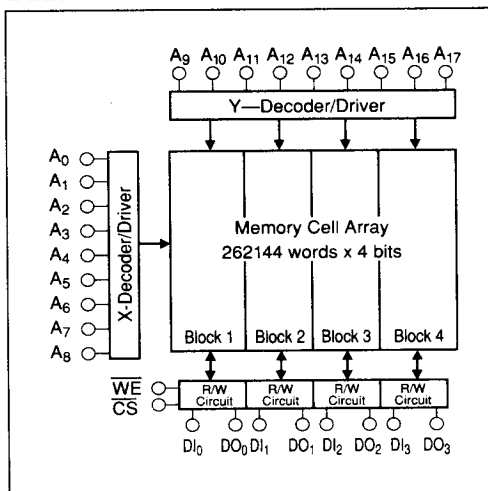
DESCRIPTION

The HM100514 is ECL 100k compatible, 262,144-words by 4-bits read/write random access memory developed for high speed systems such as scratch pads and control/buffer storage.

FEATURES

- 262,144 x 4-bit organization
- Fully compatible with 100k ECL level
- Address access time: 15 ns (max.)
- Write pulse width: 9 ns (min.)
- Low power dissipation: 800 mW (typ.)
- Output obtainable by wired-OR (open emitter)

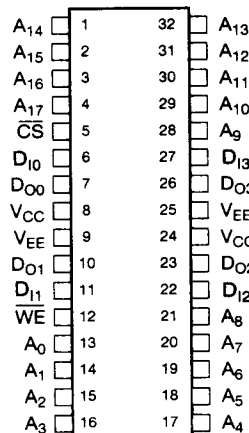
BLOCK DIAGRAM



(FG-32D)

PIN ARRANGEMENT

HM100514 Series



(Top View)

PIN DESCRIPTION

Pin Name	Function
A0-A17	Address Input
DI0-DI3	Data Input
DO0-DO3	Data Output
WE	Write Enable
CS	Chip Select
VCC	Ground
VEE	Supply Voltage



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■ TRUTH TABLE

Input			Output	Mode
$\overline{CS}$	$\overline{WE}$	D _{in}		
H	X	X	L	Not Selected
L	L	L	L	Write "0"
L	L	H	L	Write "1"
L	H	X	Dout*	Read

Notes: X: Irrelevant

*: Read Out Noninvert

■ ABSOLUTE MAXIMUM RATING (T_a = 25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V _{EE} to V _{CC}	+0.5 to -7.0	V
Input Voltage	V _{in}	+0.5 to V _{EE}	V
Output Current	I _{out}	-30	mA
Storage Temperature	T _{stg}	-65 to +150	°C
Storage Temperature	T _{stg} (bias)*	-55 to +125	°C

Note: 1. Under bias (V_{EE} = 6.0V min.)

■ ELECTRICAL CHARACTERISTICS

• DC Characteristics (V_{EE} = -4.5V, R_L = 50Ω to -2.0V, T_C = 0 to +85°C)²

Item	Symbol	Min (B)	Typ	Max (A)	Unit	Test Condition
Output Voltage	V _{OH}	-1025	-955	-880	mV	V _{in} = V _{IHA} or V _{ILB}
	V _{OL}	-1810	-1715	-1620	mV	
Output Threshold Voltage	V _{OH} C	-1035	—	—	mV	V _{in} = V _{IHB} or V _{ILA}
	V _{OL} C	—	—	-1610	mV	
Input Voltage	V _{IH}	-1165	—	-880	mV	Guaranteed Input Voltage High/Low for All Inputs
	V _{IL}	-1810	—	-1475	mV	
Input Current	I _{IH}	—	—	220	μA	V _{in} = V _{IHA}
	I _{IL}	0.5	—	170	μA	V _{in} = V _{ILB} ($\overline{CS}$)
		-50	—	—	μA	V _{in} = V _{ILB} (Others)
Supply Current	I _{EE}	-180	—	—	mA	All Outputs Open

■ AC CHARACTERISTICS (V_{EE} = -4.5V ± 5%, T_C = 0 to +85°C)²

• Read Mode

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Chip Select Access Time	t _{ACS}	—	—	10	ns	
Chip Select Recovery Time	t _{RCS}	—	—	10	ns	
Address Access Time	t _{AA}	—	—	15	ns	



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• Write Mode

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Write Pulse Width	tW	9	—	—	ns	tWSA = tWSA min
Data Setup Time	tWSD	2	—	—	ns	
Data Hold Time	tWHD	2	—	—	ns	
Address Setup Time	tWSA	2	—	—	ns	tW = tW min
Address Hold Time	tWHA	2	—	—	ns	
Chip Select Setup Time	tWSCS	2	—	—	ns	
Chip Select Hold Time	tWHCS	2	—	—	ns	
Write Disable Time	tWS	—	—	15	ns	
Write Recovery Time	tWR	—	—	17	ns	

• Rise/Fall Time

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Output Rise Time	t _r	—	1	—	ns	
Output Fall Time	t _f	—	1	—	ns	

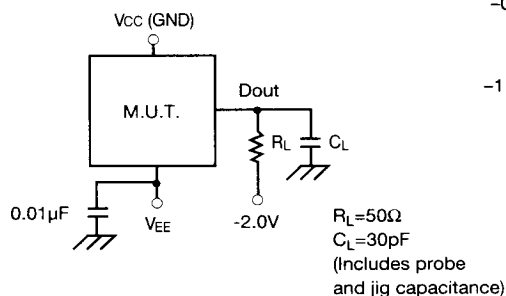
• Capacitance

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Input Capacitance	C _{in}	—	3	—	pF	
Output Capacitance	C _{OUT}	—	5	—	pF	

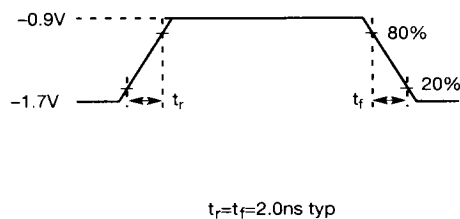
■ TEST CIRCUIT AND WAVEFORMS

• Loading Condition

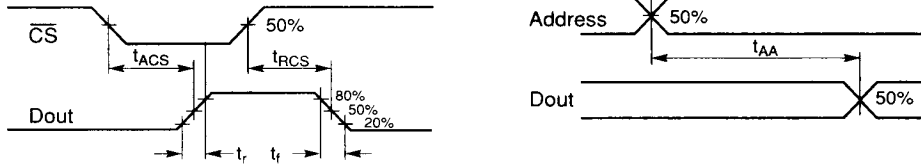
Test Circuit



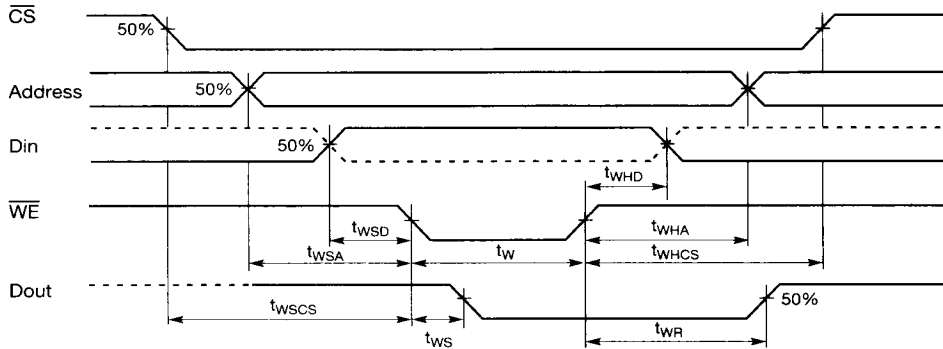
• Input Pulse



• Read Mode



• Write Mode



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